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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,506	09/22/2004	XIAONAN MA	ARC920040025US1	5505
45504	7590	01/29/2007	EXAMINER	
INTERNATIONAL BUSINESS MACHINES CORPORATION			MASKULINSKI, MICHAEL C	
INTELLECTUAL PROPERTY LAW			ART UNIT	PAPER NUMBER
650 HARRY ROAD			2113	
SAN JOSE, CA 95120				

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/29/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)
	10/711,506	MA ET AL.
Examiner	Art Unit	
Michael C. Maskulinski	2113	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 22 September 2004.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-31 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) Claim(s) _____ is/are allowed.
6) Claim(s) 1,2,4-6,9-12,14-16,19-23,25-27,30 and 31 is/are rejected.
7) Claim(s) 3,7,8,13,17,18,24,28 and 29 is/are objected to.
8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 22 September 2004 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 9/22/04.

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ .
5) Notice of Informal Patent Application
6) Other: ____ .

Non-Final Office Action

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claim 21 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 21 claims a recording medium on which a program is stored and variations thereof. These claims therefore are interpreted as recording a program per se. In order to overcome this rejection, language specifically stating the claim is limited to a computer program stored on a computer recordable medium executing on a computer.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 2, 4-6, 9-12, 14-16, 19-23, 25-27, and 30-31 are rejected under 35 U.S.C. 102(e) as being anticipated by LeCrone et al., U.S. Patent 7,117,386 B2.

Referring to claims 1, 21, and 22:

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- a. In column 7, lines 44-46, LeCrone et al. disclose that the host reads and writes data to and from logical devices that may be included in the local storage system (writing a first copy of the data to the storage system according to a first data redundancy scheme). Further, in Figure 4, LeCrone et al. disclose mirroring at the local site (a first data redundancy scheme).
- b. In column 33, lines 36-41, LeCrone et al. disclose a bunker site that contains an exact copy or image of the primary site data (writing a second copy of the data to the storage system according to a second data redundancy scheme).
- c. In column 8, lines 44-47, LeCrone et al. disclose a track status block regarding the validity of data storage tracks (maintaining metadata of the data written to the storage system according to the second data redundancy scheme).
- d. In column 33, lines 41-52, LeCrone et al. disclose propagating data from the bunker site to the target site (copying the data written to the storage system according to the second data redundancy scheme to a backup storage system, wherein the copying is performed in response to a defined condition being met; and removing the data written to the storage system according to the second data redundancy scheme after it has been copied to the backup storage system).

Referring to claims 2, 12, and 23, it is inherent to the Symmetrix data storage system disclosed by LeCrone et al. to store both blocks of user data and attributes such as file names that are associated with collections of blocks of user data.

Referring to claims 4, 14, and 25, in column 15, lines 19-22, LeCrone et al. disclose a device list to be copied (wherein the maintained metadata comprises address information associated with where the data is stored in the storage system according to the first data redundancy scheme).

Referring to claims 5, 15, and 26, in column 20, lines 20-23, LeCrone et al. disclose a disaster as may occur on the primary or production site. In the event of a production site disaster, it is assumed that the host system has failed as well (recognizing a failure in the storage system which compromises the reliability of the data stored according to the first data redundancy scheme).

Referring to claims 6, 16, and 27, in column 20, lines 24-27, LeCrone et al. disclose a remote system may be used in connection with performing the restart operations. The remote host may be connected to the target site and is able to communicate to data storage systems in performing the restart processing described elsewhere herein (responding to the failure by rebuilding an accurate copy of the data stored according to the first data redundancy scheme).

Referring to claims 9, 19, and 30, in column 40, lines 4-30, Le Crone et al. disclose retrieving the maintained metadata of the data written to the storage system according to the second data redundancy scheme; retrieving the data written to the storage system according to the second data redundancy scheme, where the data has not yet been copied to the backup storage system (data stored on the bunker site); retrieving the data written to the backup storage system (synchronization of bunker site with target site); and rebuilding an accurate copy of the data stored according to the first

data redundancy scheme, by utilizing the maintained metadata in combination with the retrieved data written to the storage system according to the second data redundancy scheme and the retrieved data written to the backup storage system (once data is synchronized between the bunker site and the target site, it is propagated to the primary site).

Referring to claims 10, 20, and 31, in Figure 23, Le Crone et al. disclose a failure of a plurality of physical disks in the storage system.

Referring to claim 11:

- a. In Figure 2, Le Crone et al. disclose a plurality of disks; a storage controller attached to the disks, wherein the storage controller receives data to be stored on the plurality of physical disks
- b. In column 7, lines 44-46, LeCrone et al. disclose that the host reads and writes data to and from logical devices that may be included in the local storage system (first data redundancy scheme logic included within the storage controller for writing a copy of the data received by the storage controller to the physical disks according to a first data redundancy scheme). Further, in Figure 4, LeCrone et al. disclose mirroring at the local site (first data redundancy scheme logic included within the storage controller).
- c. In column 33, lines 36-41, LeCrone et al. disclose a bunker site that contains an exact copy or image of the primary site data (second data redundancy scheme logic included within the storage controller for writing a

second copy of the data received by the storage controller to the physical disks according to a second data redundancy scheme).

d. In column 8, lines 44-47, LeCrone et al. disclose a track status block regarding the validity of data storage tracks (metadata of the data written to the storage system according to the second data redundancy scheme).

e. In column 33, lines 41-52, LeCrone et al. disclose propagating data from the bunker site to the target site (data backup logic to copy the data written to the storage system according to the second data redundancy scheme to a backup storage system, wherein the copying is performed in response to a defined condition being met; and maintenance logic to remove the data written to the storage system according to the second data redundancy scheme after it has been copied to the backup storage system.

Allowable Subject Matter

5. Claims 3, 7, 8, 13, 17, 18, 24, 28, and 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited prior art is related to backing up of data.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Maskulinski whose telephone number is 571-272-3649. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoliel can be reached on 571-272-3645. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Michael C Maskulinski
Examiner
Art Unit 2113